

Umesh Bellur

CONTACT INFORMATION

Dept of Computer Science
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RESEARCH INTERESTS

Autonomic and adaptive enterprise Computing, distributed algorithms, QoS in event dissemination overlay networks.

EDUCATION

Syracuse University, Syracuse, NY USA
Department of Computer Science and Engineering
Ph.D., June 1994

- Dissertation Topic: "Algorithms for object location in distributed systems"
- Advisor: Douglas Lea

BMS College of Engineering, Bangalore University, Bangalore, India
Department of Electronics Engineering
B.E., Electronics and Communication Engineering, May, 1988

HONORS AND AWARDS

IBM Faculty Award, 2006
Syracuse University Graduate Fellowship, 1992

ACADEMIC EXPERIENCE

Dept. of Computer Science & Engineering, Indian Institute of Technology Bombay, Mumbai, India
Associate Professor **February, 2003 - present**
Includes advising Ph.D. and Masters research candidates, Ph.D., Masters and BTech level coursework and research/consulting projects.

Dept. of Computer Engineering, Syracuse University, Syracuse, NY

Teaching/Research Assistant **August, 1989 - 1993**
Duties at various times have included assisting funded research, grading, office hours and leading weekly computer lab exercises.

BOOK CHAPTERS AND JOURNAL PUBLICATIONS

1. A taxonomy and classification of Adaptive event dissemination middleware with support for service guarantees. Shruti Mahambre, Madhu Kumar and Umesh Bellur, IEEE Internet Computing, Special Issue on Data Dissemination, Vol. 11, No. 4, PP 35-44, July 2007
2. Co-author on Java Network Programming: Manning Publications, ISBN Number 1-884777-49-X

REFEREED CONFERENCE PUBLICATIONS

1. Adding Underlay Aware Fault Tolerance to Event Broker Networks, Umesh Bellur and Madhu Kumar, Accepted for publication at ICSoft 2007
2. A Methodology and Tool for Determining Inter-component Dependencies Dynamically in J2EE Environments, Umesh Bellur, Accepted for publication in the Proceedings of the The Third International Conference on Autonomic and Autonomous Systems, Athens, Greece. June 2007.
3. Root Cause Isolation for Self Healing in J2EE Environments, Umesh Bellur and Amar Agrawal, Accepted for publication at the First International Conference on Self Adaptive and Self Organizing Systems (SASO) 2007, Cambridge, USA.

4. An Improved Semantic Matchmaking Algorithm, Umesh Bellur and Roshan Kulkarni, Accepted for publication at International Conference on Web Services 2007, July 2007, Salt Lake City, USA
5. A Distributed Algorithm for Underlay Aware and Available Overlay Formation in Event Broker Networks for Publish/Subscribe Systems, Madhu Kumar and Umesh Bellur, DEPSA 2007, a workshop of ICDCS 2007, June 2007, Toronto, Canada
6. Reliable Routing of Event Notifications over P2P Overlay Routing Substrate in Event Based Middleware, Shruti Mahambre and Umesh Bellur, Proceedings of Hot P2P '07, a workshop of IPDPS 2007, March 2007, Long Beach, CA, USA.
7. Adaptive Overlays for Event Based Middleware- A case for Chordal Reliability Rings: Madhukumar S.D., Umesh Bellur and V.K. Govindan, ADCOM 2006, India, Dec 2006
8. Power Aware Duty Scheduling for Wireless Sensor Networks, Umesh Bellur and Nishant Jaiswal, ICDCN, India, Dec 2006
9. A Versioning Scheme for Consistent Evolution of OO Applications, Umesh Bellur and Vallieswaran V., 13th APSEC, India, Dec 2006
10. Safety Analysis for Dynamic Update of Object Oriented Programs, Yogesh Murarka, Umesh Bellur and Rushikesh Joshi.,13th APSEC, India, Dec 2006
11. An Underlay Aware, Adaptive Overlay for Event Broker Networks, Madhu Kumar S.D., Umesh Bellur, Adaptive and Reflective Middleware Workshop, Middleware 2006, Melbourne, Australia, Nov 2006
12. An Academic Perspective on Globalization in the Software Industry. Umesh Bellur, Short paper at Compsac 2006, Chicago, USA, Sept 2006
13. Transformation of UML Design Model into Performance Model - A Model-Driven Framework., Ramrao Wagh, Umesh Bellur, Bernard Menezes.,ICEIS (3) 2006: 576-580
14. On OO Design Consistency in Iterative Development, Umesh Bellur and Vallieswaran V., Software Engineering track of ITNG 2006, Las Vegas, USA, April 2006
15. On Using OO Techniques to Establish Workflow Conformance, Umesh Bellur, Poster Paper in OOPS Track of ACM SAC 2006, Dijon, France, April 2006
16. xSpace - A Tuple space for XML and its application in Orchestration of Web Services, Umesh Bellur and Siddharth Bondre, Distributed and Grid Computing Track of ACM SAC 2006, Dijon, France, April 2006
17. Towards a Programming Model and Middleware Architecture for Self-configuring systems, Umesh Bellur and Narendra Nanjangud, COMSWARE 2006, New Delhi, India, January 2006
18. Functional and Architectural Adaptation in Pervasive Computing Environments, Umesh Bellur, S.K. Nandy, K.Kalapriya and Narendra Nanjangud, MPAC, Middleware 2005, Grenoble, France, Nov 2005
19. Towards Service Orientation in Pervasive Computing Systems, Umesh Bellur and Narendra Nanjangud, ITCC 2005, Las Vegas, USA, April 2005
20. A Declarative Framework to create Differentiated Service Levels in Component Based Middleware, PDCS 2004, Cambridge, MA, Nov 2004
21. Performance Prediction and Physical Design of J2EE based Web applications, WSEAS CSCC 2004, Athens, Greece., July 2004
22. Autonomic Computing Platform for Distributed Enterprise Computing, Umesh Bellur, Position paper at Workshop on Software Performance (WOSP), January 2004.
23. Discovery in distributed object environments - Umesh Bellur, NCOOT August 2003.
24. The Role of Components and Standards in Software Reuse, Umesh Bellur, Workshop on Compositional Software Architectures. 1998, Monterey CA.

25. Musings of an Engine Builder, Umesh Bellur, Position paper at the OOSPLA '95 Workshop on Object Engines.
26. Building Large Scale Distributed Systems, Umesh Bellur and Swami Venkates, Position paper at the OOPSLA '95 workshop on "Building Large Scale Distributed Object Systems".
27. CORBA and Beyond - Frameworks for distributed object system development, Umesh Bellur, OOPSLA '94 workshop on CORBA.
28. Clustering - Composition for Active Object systems, Umesh Bellur, Gary Craig, Doug Lea, Proceedings of the 27th Hawaii International conference on System Sciences.(01/94)
29. DIAMONDS - Principles and Philosophy, Umesh Bellur, Gary Craig, Kevin , Shank, Doug Lea and Vaughn Combs, CASE Center Technical Report No. 9313, Syracuse University, 06/93
30. Clusters: A Pragmatic Approach towards Supporting a Fine Grained Active Object Model in Distributed Systems, Gary Craig, Umesh Bellur, Kevin Shank and Doug Lea, Proceedings of the Ninth International Conference on Systems Engineering, UNLV, 07/93
31. A Shared Memory Programming Environment for Distributed Systems, Umesh Bellur & Sumana Srinivasan, Proceedings of OpenForum '92 Technical Conference, Utrecht, The Netherlands, 11/92
32. A C++ Class Flattening Tool, Umesh Bellur & Imran Bashir, Proceedings of C++ at Work, Santa Clara, CA, 11/91
33. Transparent Load Sharing on UNIX, Umesh Bellur, Gary Craig, Kevin Shank, CASE Center Technical Report, Syracuse University, 05/92

PATENTS GRANTED

1. US 7,210,143 Deployment of applications in a multitier compute infrastructure
2. US 6,463,079 Processing orders for high bandwidth connections

INVITED PRESENTATIONS

- Keynote speaker at the CIO Club, Computer Society of India, Mumbai, India June 2007
- Department Colloquium, Department of Computer Science and Engineering, Ohio State University, Columbus, OH, USA, May 2007
- Invited expert speaker at IDC India Two City Knowledge Conference on Service Oriented Architectures, New Delhi and Bangalore, February 2007
- Invited Speaker at SAIG conference of Siemens Research, Mumbai, India, Jan 2007
- Keynote Speaker at ADCOM 2006, Surathkal, India, Dec 2006
- Invited Panelist at COMPSAC 2006 panel on "How to prepare students for the global environment?", Chicago, August 2006
- Department Colloquium talk at Marquette University, Dept of MSCS, Milwaukee, WI, USA, Sept 2006
- Keynote at L and T Infotech COE Day, Mumbai, India, June 2005
- IBM IRL, Stochastic Methods in Autonomic Computing, New Delhi, India, May 2005
- SAP Innovation Congress, Autonomic Computing - problems and approaches, Miami, FL, USA, March 2004,
- Seminar on Oss for Broadband Networks and Services. Delivered to WIPRO. Bangalore, India, Oct 2003.
- Hewlett Packard Labs, Lights out Management of Distributed Applications, Palo Alto, CA, June 2003
- Fourth IITB-Persistent Workshop on Data Management, Security Technologies underlying Databases, 2003, IITB, India
- Invited Speaker at Marcus Evans Telecom CIO Summit, Lake Geneva, WI, USA, May 2001.

- Panel chair for OSS at new generation networks at OSS Summit, Miami, FL, USA, Feb 2001.
- Enterprise Application Integration at Next Generation OSS, Denver, USA Sept 2000
- Workshop on Compositional Software Architectures, The Role of Components and Standards in Software Reuse. June 1998, Monterey, CA

GRANTS SECURED

- Motorola Research grant for research into seamless mobility in service oriented environments., \$ 14000 for 2006-2007, Sept 2006.
- IBM Faculty Award for research into self-configuration and self-healing in Autonomic Computing; \$ 26000 July 2006
- Intel IT Research Council, Continuing Grant for research into Self healing and Performance Modeling of Enterprise Applications, \$ 24000 along with Prof. Varsha Apte of CSE, IIT Bombay, January 2006
- Intel Corp, Linux Based Video Learning Solution for Distance Education, \$60,000 along with Prof. Deepak Phatak, January 2005
- Department of Science and Technology, Govt. of India - Service Oriented Architectures for NRDMS Applications, Rs 15 Lakh, April 2005
- Intel IT Research Council, Follow up grant for research into Autonomic Computing issues, \$ 24000 along with Prof. Varsha Apte of CSE, IIT Bombay, March 2005
- L and T Infotech - Enterprise Integration Architectures with Service Orientation, Rs 12 Lakh, June 2004
- Intel IT Research Council, Dynamic Determination of Topology for Distributed enterprise applications, \$ 12000 along with Prof. Varsha Apte of CSE, IIT Bombay, July 2004
- IRCC at IIT Bombay - Autonomic Computing Infrastructure, Rs 2 Lakh, Seed Grant, July 2003

COURSES TAUGHT

1. Database Systems, Under Graduate, Fall 2007 (current), 85 students.
2. Software engineering, Graduate, Fall 2006, 22 students.
3. Distributed Algorithms, Graduate, Spring 2007, 2006, 2005, 2004 - Approx 30-45 students.
4. OO Design - Fall 2005, 2005, 2003 - Approx 30 students.

STUDENTS GUIDED

MASTERS

- Akhilesh Shirabate - Performance Modeling of Apache using Queueing Petri nets - 2004 - Yahoo India
- Sudhir G. - Topology Determination in J2EE based distributed systems - 2005 - Yahoo India
- Sudeep Goyal - Mapping Application QoS to Network Configurations on DiffServ over MPLS networks - 2005, Founder of a startup currently in stealth mode.
- Nishant N. - Towards Energy Optimizing Middleware for Wireless Sensor Networks - 2006 - Yahoo India
- Amar Agrawal - Topology Aware Failure Diagnosis for Distributed Systems - 2006 - Webaroo
- Vallieswaran N. - On supporting Design Evolution and Traceability - 2006 - Currently a Ph.D. student at IIT Bombay.
- Roshan Kulkarni - Semantic Matchmaking with P2P Discovery of Web services - 2007 - Webaroo

- Kautilya Jain - Performance Modeling of J2EE based Distributed Component systems - 2007 - Symantec India.

PH.D.

- Yogesh Murakka - expected to graduate Jan 2008
- Shruti Mahambre - expected to graduate July 2008
- Madhu Kumar - expected to graduate July 2008

ACADEMIC SERVICE **Program Committees**

- Track Chair for Autonomic Computing track of ACM SAC 2007
- IEEE International Conference on Autonomic Computing ICAC 2007
- IEEE Self Adaptive and Self Organizing Systems SASO 2007
- Distributed Event Based Systems DEBS 2007
- ICDCS DEPSA 2007
- International Workshop on Pervasive Systems and Applications, 4th IEEE ICCSA, 2006
- ITNG 2007, ITNG 2005, ITNG 2005
- International Conference on Data Engineering ICDE 2006
- Object-Oriented Programming Languages and Systems - Special Track at the 21st ACM Symposium on Applied Computing, SAC 2005, 2006
- International Workshop on Managing Context Information in Mobile and Pervasive Environments, MCMP 2005
- Hawaii International Conference on System Sciences (HICSS) 05
- National Conference on OO Technologies (NCOOT) 03, 04
- ACM Sigmetrics Workshop on Software Performance (WOSP) 04
- Object-Oriented Programming Languages and Systems - Special Track at the 19th ACM Symposium on Applied Computing, SAC 2004
- International Conference on High Performance Computing - HiPC 2003

PROFESSIONAL EXPERIENCE

Collation Inc., Palo Alto, CA, USA

Vice President of Research and Development

July, 2000 - Feb, 2003

Founded in June of 01, Collation Inc. focused on building software products for managing enterprise data centers. Specifically, they delivered products that achieve operational automation of large-scale enterprise software deployments that are based on J2EE technologies. As a founding member (one of 4), I helped conceptualize the product, do the market research and build a business plan that raised more than \$ 6M in round A funding from venture capital firms in an extremely difficult funding climate. Collation Inc. was subsequently acquired by the IBM Tivoli Group in 2004.

Covad Communications Grp., Santa Clara, CA USA

Vice President of Software Engineering

July, 1997 - July, 2001

Responsible for managing over 165 engineers and a budget of over \$ 30M. Accountable for all of Covad's business process automation as well as that of its supply chain. Achieved integration of 2 different software engineering groups and products obtained via acquisitions

Oracle Corp, Redwood Shores, CA, USA

Standards Manager

July, 1995 - July, 1997

Evangelist of OMG and W3C standards within Oracle Corp and Oracles representative to these bodies. Chief Editor for the CORBA Component model - joint submission to the OMG with SUN, IBM, Oracle, Netscape and Visigenic.

TCSI Corp, Berkeley, CA, USA

Principal Engineer

April, 1993 - July, 1995

Delivered a high performance, distributed object infrastructure (ORB, Services and Frameworks) for telecommunication applications. Responsible for technical leadership as well as project management in this role. Architected CORBA compliance into TCSI's proprietary infrastructure and managed development of the ORB, the interoperability modules and some OMG Cos services.

Please go to the next page for my references.

REFERENCES

- 1. Prof. Deepak Phatak**
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- 2. Prof. Krithi Ramamritham**
Vijay and Sita Vashee Chair Professor
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- 3. Prof. Doug Lea**
Head, Department of Computer Science
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- 4. Prof. Sheikh Iqbal Ahamed**
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<http://www.mscs.mu.edu/~iq/>
- 5. Prof. Rajiv Ramnath**
Director of Practice, Collaborative for Enterprise Transformation and Innovation (C.E.T.I)
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- 6. N.C. Narendra, PhD**
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